

WHAT IS CLAIMED IS:

1. An implementation unit system, comprising:
 - a plurality of implementation units,
 - a controller that generates a system goal; and
 - an allocator that receives the system goal, partitions the system goal into a plurality of sub-goals based on an allocation parameter, and allocates the sub-goals to at least one of:
 - the plurality of implementation units, and
 - a plurality of implementation modules comprising a group of the plurality of implementation units,
 - wherein the allocator controls the implementation of the plurality of implementation units.
2. The system, as recited in claim 1, further comprising:
 - at least one sensor that detects an implementation state of at least one of the plurality of implementation units and provides the controller with the implementation state,
 - wherein the controller generates the system goal based on the implementation state.
3. The system, as recited in claim 1, wherein at least one of the plurality of implementation units is an air jet.
4. The system as recited in claim 1, further comprising:
 - an input source that provides system objective to the controller,
 - wherein the controller generates the system goal based on the system objective signal.
5. The system, as recited in claim 4, wherein the input source is a computer.
6. The system, as recited in claim 1, wherein the controller is remotely located from the plurality of actuators.
7. The system, as recited in claim 1, further comprising:
 - at least one sensor that detects an implementation state of at least one of the plurality of implementation units and provides the controller with the implementation state; and
 - an input source that provides an input signal to the controller,

wherein the controller generates the system goal based on the implementation state and the input signal.

8. The system, as recited in claim 1, wherein the allocation parameter is predefined.

5 9. The system, as recited in claim 1, wherein the allocation parameter is identity of the plurality of implementation modules under the control of the allocator.

10. The system, as recited in claim 1, wherein the allocator partitions the system goal into the plurality of sub-goals based on the allocation parameter and a second allocation parameter,

10 wherein the second allocation parameter is a location identifier for at least one of:

the plurality of implementation units, and
the implementation modules.

11. The system, as recited in claim 1, wherein the allocator partitions the system goal into the plurality of sub-goals based on the allocation parameter, a second allocation parameter and a third allocation parameter,

wherein the second allocation parameter is a location identifier and the third allocation parameter is a weighting factor for at least one of:

the plurality of implementation units, and
the implementation modules.

12. The system, as recited in claim 1, wherein the allocator further includes a plurality of hierarchical allocation levels each of which include at least one module allocator that allocate the sub-goals.

13. A method for allocating a system instruction to a plurality of actuators,
25 comprising:

grouping the plurality of actuators into a plurality of module actuators comprising at least one of a plurality of sub-module actuators and at least one of the plurality of actuators, wherein each of the plurality of sub-module actuators includes at least one of the plurality of actuators;

30 partitioning the system instruction into a plurality of sub-instructions for each of the plurality of module actuators based on at least one allocation parameter;

allocating each of the plurality of sub-instructions to at least one of the plurality of sub-module actuators if the module actuator includes the plurality of sub-module actuators; and

5 actuating the at least one of the plurality of actuators within the at least one sub-module actuator based on the sub-instructions, if the module actuator does not include the plurality of sub-module actuators.

13. The method, as recited in claim 12, wherein the grouping step is based on a physical layout of the plurality of actuators.

14. The method, as recited in claim 12, further comprising:

10 partitioning each of the plurality of sub-instructions into a plurality of second sub-instructions for each of the sub-module actuators;

determining if each of the plurality of sub-module actuators includes at least one second sub-module actuator;

15 allocating each of the plurality of second sub-instructions to the least one second sub-module actuators for each of the sub-module actuators determined to include the at least one second sub-module actuator; and

actuating at least one of the plurality of actuators disposed within the sub-module based on the second sub-instructions for each of the sub-module actuators determined not to include the at least one second sub-module actuator.

20 15. The method, as recited in claim 13, wherein the allocation parameter includes at least one of:

the number of the plurality of sub-module actuators; and

the number of the plurality of module actuators.

25 16. A method for allocating a desired goal to a plurality of actuators, comprising:

establishing a plurality of allocation levels arranged in a hierarchical manner; and

for each allocation level:

30 identifying the number of module allocators within the allocation level; and

for each module allocator:

receiving an allocation goal that is at least one of the desired goal and a module actuation goal from one of the plurality of allocation levels

that is higher in hierarchical order than the allocation level; and
identifying an allocation parameter for the module
allocator;
generating the module actuation goal by partitioning the
actuation goal based on the allocation parameter;
determining whether the allocation level is a bottom
allocation level;
allocating the module actuation goal to one of the
module allocators within one of the plurality of allocation levels that is lower in
hierarchical order than the allocation level, if it determined that the allocation level is
not the bottom allocation level; and
assigning the module actuation goal to at least one
actuator of the array of actuators controlled by the module allocator if it is determined
that the allocation level is the bottom allocation level.

15 17. The method, as recited in claim 16, wherein the number of module
allocators identified in the identifying the number of module allocators step is
predefined.

18. A method for allocating a goal to a plurality of implementation units,
comprising:

20 grouping the implementation units into at least one group based on a
first parameter;

dividing the at least one group into a plurality of sub-groups based on a
second parameter;

allocating the goal to the at least one group based on

25 dividing the goal into a plurality of sub-goals

19. A method for allocating a goal, comprising:

receiving the goal;

obtaining an allocation parameter;

partitioning the goal into a plurality of sub-goals based on the
30 allocation parameter; and

allocating the goal to at least one of a plurality of implementation units
and a plurality of groups of the plurality of implementation units.

20. The method, as recited in claim 19, wherein the allocation parameter is predetermined.

21. The method, as recited in claim 19, wherein the allocation parameter is an indication of the number of groups of plurality of implementation units to which the goal is to be allocated.

22. The method, as recited in claim 19, wherein the obtaining step further comprises obtaining a second allocation parameter.

23. The method, as recited in claim 22, wherein the second allocation parameter is a location identifier for at least one of the plurality of implementation units and the plurality of groups to which the goal is to be allocated.

24. The method, as recited in claim 22, wherein the partitioning step further comprises partition the goal based on the allocation parameter and the second allocation parameter.

25. The method, as recited in claim 22, wherein:
the obtaining step further comprises obtaining a third allocation parameter; and
the partitioning step further comprises partitioning the goal based on the
allocation parameter, the second allocation parameter and the third allocation
parameter.

26. The method, as recited in claim 25, wherein the third allocation parameter is a allocation weighting factor for at least one of the plurality of implementation units and the plurality of groups to which the goal is to be allocated.